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23409 7590 05/14/2009

MICHAEL BEST & FRIEDRICH LLP
100 E WISCONSIN AVENUE
Suite 3300
MILWAUKEE, WI 53202

EXAMINER

JACOB, MARY C

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 05/14/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/578,791

05/03/2006

Michael Weiler

022862-1067

8690

TITLE OF INVENTION: METHOD FOR DETERMINING A BLANK FORM OF AN ELASTIC COMPONENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	08/14/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

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B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

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B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23409 7590 05/14/2009

MICHAEL BEST & FRIEDRICH LLP
100 E WISCONSIN AVENUE
Suite 3300
MILWAUKEE, WI 53202

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,791	05/03/2006	Michael Weiler	022862-1067	8690

TITLE OF INVENTION: METHOD FOR DETERMINING A BLANK FORM OF AN ELASTIC COMPONENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	08/14/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
JACOB, MARY C	2123	703-007000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Date _____

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This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,791	05/03/2006	Michael Weiler	022862-1067	8690
23409	7590	05/14/2009	EXAMINER	
MICHAEL BEST & FRIEDRICH LLP 100 E WISCONSIN AVENUE Suite 3300 MILWAUKEE, WI 53202			JACOB, MARY C	
			ART UNIT	PAPER NUMBER
			2123	
DATE MAILED: 05/14/2009				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 458 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 458 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability

Application No.

10/578,791

Applicant(s)

WEILER ET AL.

Examiner

Art Unit

MARY C. JACOB

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 3/9/09.
2. ☒ The allowed claim(s) is/are 21,22,24,25,27 and 28.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>20081111</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

1. The response filed 3/9/09 has been received and considered. Claims 1-20 have been cancelled. Claims 21-28 have been presented for examination.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Julianne M. Cozad Smith, Reg. No. 62,174 and Derek Stettner, Reg. No. 37,945 on 5/5/09.

The application has been amended as follows:

Claim 21, line 4, after the phrase "electric signals to" the phrase --an arithmetic-logic unit in-- has been inserted.

Claim 21, line 5, the phrase "(an arithmetic-logic unit)" has been deleted.

Claim 21, line 9, the phrase "generating parameters" has been changed to – generating assumed form parameters--.

Claim 21, lines 10-11, the phrase "(the "assumed form parameters")" has been deleted.

Claim 23 has been cancelled.

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Claim 25, line 4, after the phrase "electric signals to" the phrase --an arithmetic-logic unit in-- has been inserted.

Claim 25, line 5, the phrase "(an arithmetic-logic unit)" has been deleted.

Claim 25, line 11, the phrase "generating parameters" has been changed to --generating assumed form parameters--.

Claim 25, lines 12-13, the phrase "(the "assumed form parameters")" has been deleted.

Claim 26 has been cancelled.

Claim 28, line 5, the phrase "representing a counter force to a bearing force of the non-articulated wiper arm," has been replaced with --of the non-articulated wiper arm which is counter to a bearing force,-- has been inserted.

Claim 28, line 10, the phrase "an initial force" has been changed to --the initial force--.

Allowable Subject Matter

3. **Claims 21, 22, 24, 25, 27 and 28** are allowed.

4. The following is an examiner's statement of reasons for allowance: While Billot et al ("Simulation of Aerodynamic Uplift Consequences on Pressure Repartition-Application on An Innovative Wiper Blade Design", Vehicle Aerodynamics Design and Technology-SAE, pages 235-243, 2001) teaches the initial force and counter force acting on a wiper blade, creating a finite element model of a wiper blade design, performing an aerodynamic simulation, determining a deformed profile of the rubber

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blade element by mechanical calculation, and applying a load to the finite element model, Kota et al (US Patent 7,360,272) teaches a compliant windshield wiper design, designed through the use of a finite element model, and discusses the force distribution on the wiper blade, and Zimmer et al (US Patent 6,349, 447) teaches the initial force and counter force acting on a wiper blade , **none of these references taken either alone or in combination with the prior art of record disclose** a method of simulating the deformation of a non-articulated wiper arm, specifically including

(Claim 21) "...providing parameters of a desired target form of the non-articulated wiper arm...to an arithmetic-logic unit...the arithmetic logic unit simulating a deformation of a simulated model of the non-articulated wiper arm where a counter force opposes an initial force; increasing the counter force in several steps up to an end value; generating assumed form parameters of the form of the simulated model that is created under the effect of the counter force when the counter force is at the end value; and determining a virtual blank form of the non-articulated wiper arm based on the assumed parameters"

(Claim 25) "...providing parameters of a desired target form of the non-articulated wiper arm...to an arithmetic-logic unit...the arithmetic logic unit simulating a deformation of a simulated model of the non-articulated wiper arm where a counter force opposes an initial force; increasing the counter force in several steps up to an end value, wherein in each step a current counter force is aligned perpendicular to a surface of the simulated model of the non-articulated wiper arm; generating assumed form parameters of the form of the simulated model that is created under the effect of the counter force when the counter force is at the end value, where the assumed form parameters represent

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information about a blank form of the non-articulated wiper arm; determining a virtual blank form of the non-articulated wiper arm based on the assumed parameters; and simulating elasticity properties of the non-articulated wiper arm using the virtual blank form...”

(Claim 28) “...providing parameters of a desired target form, which the non-articulated wiper arm is supposed to assume under the effect of an initial force of the non-articulated wiper arm which is counter to a bearing force...to a digital circuit...wherein the arithmetic logic unit simulates a deformation of a simulated model of the non-articulated wiper arm using a finite element method where a counter force opposes the initial force; increasing the counter force in several steps up to an end value; generating parameters of the form of the simulated model that is created under the effect of the counter force when the counter force is at and end value; and determining a virtual blank form of the non-articulated wiper arm based on the generated parameters of the form of the simulated model...”

in combination with the remaining elements and features of the claimed invention. It is for these reasons that the Applicant’s invention defines over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Drawings

5. The objections to the drawings recited in the 11/7/08 Office Action have been withdrawn in view of the amendment to the specification filed 3/9/09.

Claim Rejections - 35 USC § 112

6. The rejection of Claims 1-20 under 35 U.S.C. 112, second paragraph have been withdrawn due to the cancellation of the claims.

Claim Rejections - 35 USC § 101

7. The rejection of Claims 1-20 under 35 U.S.C. 101 have been withdrawn due to the cancellation of the claims.

Claim Rejections - 35 USC § 102

8. The rejection of Claims 1, 4-6, 9, 12-15, 18-20 under 35 U.S.C. 102(e) as being anticipated by Kota et al have been withdrawn in view of the cancellation of the claims.

Claim Rejections - 35 USC § 103

9. The rejection of **Claims 2, 3, 7, 8, 10, 11, 16, 17** under 35 U.S.C. 103(a) as being unpatentable over Kota et al in view of Tworzydlo et al ("Knowledge Based Methods and Smart Algorithms in Computational Mechanics", Engineering Fracture Mechanics, Vol, 50, No. 5/6, pages 759-800, 1995), have been withdrawn in view of the cancellation of the claims.

Response to Arguments

10. Applicant's arguments, see page 7, filed 3/9/09, with respect to Claims 21-28 in view of the prior art of record have been fully considered and are persuasive. The rejection of the claimed subject matter in view of the prior art has been withdrawn.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. Kim et al ("Optimization of a Hyper-Elastic Structure with Multibody Contact Using Continuum-based Shape Design Sensitivity Analysis", Struct. Multidisc. Optim. 21, 196-208, 2001) teaches a continuum based shape design sensitivity formulation for a hyper-elastic structure with multibody frictional contact.

13. Mankame et al ("Topology Optimization for Synthesis of Contact-Aided Compliant Mechanisms Using Regularized Contact Modeling", Computers and Structures 82, pages 1267-1290, 2004) teaches a topology optimization technique for systematically designing contact-aided compliant mechanisms.

14. Howell et al (US Patent 7,075,209) teaches a method for designing and optimizing a compliant mechanism.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary C. Jacob whose telephone number is 571-272-6249. The examiner can normally be reached on Tuesday-Thursday, 7AM-4PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Mary C Jacob/

Examiner, Art Unit 2123

/M. C. J./

5/7/09

/Paul L Rodriguez/

Supervisory Patent Examiner, Art Unit 2123